NYASALAND PROTECTORATE.

ANNUAL MEDICAL AND SANITARY REPORT

For the Year ending 31st December, 1942.

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I. PUBLIC HEALTH.

A. GENERAL REMARKS.

1. In spite of the great reduction in staff, and the additional burden thrown on the Medical Department by war conditions, it is possible to state that the activities have been maintained at least up to pre-war level. This has been rendered possible by placing considerably increased responsibility on the best of our African subordinate staff and it is pleasing to be able to record that a number of our locally trained Hospital Assistants have been entrusted in administering hospitals and districts and maintaining the confidence of the local population.

2. The Department was honoured by the visit of Dr. W. H. Kauntze, C.M.G., M.B.E., Assistant Medical Adviser to the Secretary of State for the Colonies. Dr. Kauntze arrived in Nyasaland on the 9th May, 1942. He left the Protectorate on the 24th of May, 1942.

3. Dr. H. S. de Boer, M.C., relinquished his duties as Director of Medical Services, Nyasaland, on the 29th June, 1942, and proceeded to Uganda as Director of Medical Services of that Colony. Dr. R. Calleja, Senior Medical Officer, assumed the duties of Acting Director of Medical Services, Nyasaland, on the 29th June, 1942.

4. One Senior Medical Officer, six medical officers and one nursing sister remain seconded to the Army. Two retired officers, Doctors J. O. Shircore, C.M.G., and W. A. S. Lamborn, O.B.E., continued in their employment as temporary medical officers. In addition two German Jewish refugee doctors, F. Schwarz and G. Rosenberg were engaged as temporary medical officers. Dr. M. A. W. Roberts, F.R.C.S., arrived in Nyasaland on 23rd August, 1942 and assumed duty as Surgical Specialist. Dr. H. D. Cronyn, F.R.C.S., was seconded to Cyprus for six months as Acting Surgical Specialist. He left this country on the 25th September, 1942. One nursing sister retired and three others resigned. To replace these, three new sisters arrived in Nyasaland. From time to time the nursing staff was supplemented from trained local help.

5. Mr. W. Millar, Drainage Engineer, has completed an Anti-Malarial Survey of Zomba, Blantyre, Limbe and Lilongwe. His plans and estimates for these townships have been presented. Unfortunately, the high cost of these schemes precludes us from putting them into effect at the present time. As there was no scope for the activities of Mr. Millar in the Medical Department, he was seconded to the Public Works Department as Civil Engineer with effect from the 1st January, 1943.

6. Owing to difficulty of obtaining stocks of drugs and medical supplies by Missions and Planters, the whole onus has been thrown on the Medical Department and Government is the main supplier for all medical needs in the country, at cost plus a percentage to cover handling charges.

7. The European and African civil hospitals have catered for the military personnel requiring hospitalisation.

8. Under the Defence Regulations of 1939, a Quinine Order, 1942 was passed, to safeguard the stock of this drug in the Protectorate.

9. To protect the country, Government by Proclamation No. 1 of 1942, introduced special defence measures against Yellow Fever, which has been showing disquietening activity in adjoining territories. These measures include protective inoculation of persons, employed at, and about aerodromes, and the provision of disinfestation of planes on arrival.

10. A lymph laboratory was opened at Zomba during the year. The Pathologist is now manufacturing lymph. Previously the lymph was imported from Tanganyika at a much higher cost.

11. Extensions and improvements were carried out at the three European hospitals, Zomba, Blantyre and Lilongwe. Extensions are now also under construction at the native hospitals of Lilongwe, Ncheu and Kota-Kota.

12. During the year, the medical department has given considerable help to various recruiting habituation camps by seconding hospital and sanitary assistants and sometimes a part time medical officer or sub-assistant surgeon until the Army could supply their own medical officers.

Nutrition Unit.

13. In spite of its depletion of staff and many set backs, this unit continued to function under the supervision of the District Commissioner, Kota-Kota, with Miss Barker as Nutritional Investigator, an Agricultural Supervisor and a District Medical Officer. Dr. W. T. C. Berry, the medical officer of the unit continued his observations on the causation of Tropical Ulcers.

Miss Barker has made a comprehensive survey of various districts in the Protectorate investigating the native foods in relation to the various tribes.

B. GENERAL DISEASES.

14. During the year, 468 patients (402 civil and 66 army) were treated in Government European hospitals and 20,624 in Government African hospitals.

15. 1,766 Europeans and 163,077 Africans were treated as out-patients at Government hospitals.

16. 460,193 Africans were treated at Government rural dispensaries of which, 279,269 were males and 180,924 were females. The corresponding figure in 1941 was 418,756 inclusive.

17. There were 969 operations performed at the Zomba African hospital. The operations performed at Zomba and Blantyre European hospitals numbered 59 and 64 respectively.

Operations are also conducted in most of the district African hospitals.

C. COMMUNICABLE DISEASES.

18. The year under review has been comparatively free from epidemic diseases.

Small Pox.

19. There were no cases of small-pox reported. The resident population is now fairly well vaccinated but contact across our boundaries is easy and it is impossible to prevent infected persons entering the country. Small Pox used to be the scourge of this country and interfered considerably with its economic life.

The number of vaccinations performed during the year was 118,554, of which 42,201 were recorded as successful.

Cerebro-Spinal Fever.

20. This disease continues to be endemic throughout the greater part of the Protectorate. The number of cases reported during the year was 118 with 39 deaths. The figure for 1941 was 244 with 47 deaths. A large proportion of the deaths were in cases reported too late to receive skilled attention. The heaviest incidence was in Dowa district totalling 37 cases with 16 deaths.

Trypanosomiasis.

21. Thirteen cases of Trypanosomiasis were reported during the year with no deaths. Eleven of these cases occurred in Kota-Kota district. Only one case occurred in the Southern Province. In 1941, there were also thirteen cases reported, eight of which occurred in Kota-Kota district.

Tropical Typhus.

22. There were no cases reported. In 1941, two cases were reported, both in Europeans.

Tuberculosis.

23. 235 cases of tuberculosis were treated in Government hospitals out of which 141 were of the Pulmonary type. The number stated does not represent the true incidence as some of these were re-admissions. The Pulmonary form of the disease is the commonest but bone and gland infections are not rare. Tuberculosis in cattle is not common, and milk is not regularly consumed by natives.

Malaria.

24. No part of the country is free from malaria. In the low lying areas infection apparently occurs throughout the year and the population develops in time, a considerable immunity. In the foothills and highland areas, the incidence is highest after the rains. During the rainy period, streams run full and are therefore not dangerous: but mosquito breeding is favoured by the creation of pools in low lying areas, swamps, seepages and artificially made holes. With the ending of the rains stream beds become a most prolific source of breeding places for pools are formed in the river beds as the flow of water grows less.

Of the 468 patients admitted to European Government hospitals 147 were diagnosed as malaria; but only 21 of these patients showed malarial parasites in blood films. The rest were negative and the diagnosis was based on clinical evidence only. The cause of "Fever" without malarial parasites cannot always be attributable to malaria.

The distribution was as follows:

European Hospitals	Cases of Malaria	Total number of patients admitted during the year
Zomba	68 ...	204
Blantyre	60 ...	213
Lilongwe	19 ...	51
	147	468

Leprosy.

25. At the close of the year there were 856 lepers of which 585 were males, and 271 were females, in residence at leper settlements maintained by Missions, with Government assistance. In addition Government hospitals treated 143 males and 71 females.

Helminthic Diseases.

26. 2,274 persons were treated at Government African hospitals for Ankylostomiasis and 971 for Schistosomiasis. The incidence must be higher than is shown as many do not seek treatment.

Venereal Diseases.

27. The number of persons admitted to Government hospitals for venereal disease totalled 2,267 of which 1,271 were males and 996 females.

Syphilis accounted for 1,778 cases and Gonorrhoea for 489.

The number of out-patients treated for venereal disease was 2,988 of which 1,556 were males and 1,432 females.

The figures appear to indicate that Gonorrhoea is still comparatively the rarer venereal disease. I think the disparity in the figures is only apparent because probably patients infected with Gonorrhoea may seek treatment from practitioners in native medicines. As M. & B. 693 is becoming very popular amongst natives this may in time bring infected persons in larger numbers to these institutions.

D. VITAL STATISTICS.

General African Population.

28. General registration of births and deaths amongst Africans is not yet attempted, but in three limited areas which are widely separated, enumerators employed by the Medical Department attempt to keep records collecting data from village headmen.

Area and District.	Estimated population.	Birth rates per 1,000 of population.	Death rates per 1,000 of population.
Fort Manning District ...	34,080	47.8	20.4
Native Authority ... Tengani's Area (Lower Shire)	19,675	57.30	34
5 miles radius around ... Karonga Town (North Nyasa District)	4,669	38.8	30.05

Europeans and Asiatics.

29. No estimates for 1942 of the European and Asiatic populations are yet available. The estimated populations in 1941 were 1,815 Europeans and 2,017 Asiatics.

30. Excluding those on military service, 241 European officials were resident in the country during the year and 59 were placed on the sick list. Two deaths occurred amongst officers. The average number off duty on any one day was 2.3.

II. HYGIENE AND SANITATION.

Labour Conditions.

31. In reviewing the medical activities of this year first place must be allotted to the great improvements in African Housing and feeding of labour on estates.

A start was made in this direction a few years ago and although there were a few improvements, no great result was achieved until recently.

In spite of the difficulty in procuring material and of shortage of labour, this year has seen unprecedented progress.

The feeding of the employees has also improved considerably.

Schools.

32. There are still no organised medical inspections of African schools as the great number of village schools makes this impossible but some schools which are central and accessible, are inspected by members of the medical staff.

Prisons and the Mental Hospital.

33. The Central and district prisons are inspected weekly by the Medical Officer or Sub Assistant Surgeon in charge of the district.

The Lunatic Asylum is under the care of a Medical Officer. Both prison and asylum diets are adequate and recently a ration of Palm Oil has been introduced to remedy any fat and vitamin A. deficiencies.

Township Sanitation.

34. Health Inspectors have been maintained in charge of the routine sanitary and public health services in the townships of Zomba and Blantyre. The officer in charge of the latter also supervised activities at Limbe. Elsewhere officers in medical charge of districts have worked in ensuring the maintenance of routine sanitary services.

Rural Sanitation.

35. A special effort has been made to interest Native Authorities and village headmen in improved housing conditions. Special attention has been given to the provision of ventilation, kitchens separated from living quarters and family pit latrines. From time to time Native Authorities are called to attend a course of training at the Jeanes School and the training they receive is of considerable value.

III. SPECIAL SERVICES.

Maternity and Child Welfare.

36. Progress in this important work has been steadily maintained both by Government and by various missions. Some of the mission stations have doctors but most of the work is done under the direction of nursing sisters. The recognised Government centres for this work are the Zomba African Hospital, Lilongwe African Hospital and Jeanes School. A new centre has been opened at Chonde Rural dispensary, where a native midwife has been stationed and works under the supervision of the Medical Officer, Mlanje. The Church of Scotland Mission maintains nursing sisters at Blantyre, Mlanje, Livingstonia, Loudon, Ekwendeni and Bandawe. All these mission centres are developing village services to a large extent with locally trained women. The Dutch Reformed Church Mission has Child Welfare Centres and maternity hospitals at Mkhoma, Mlanda, Malingunde and Mvera. This mission is also developing a village service around the mission stations. The Universities Mission to Central Africa maintains Maternity and Child Welfare Centres at Mponda and Likoma. The White Fathers Mission has centres at Ntakataka and Likuni. The centre at Likuni is proving a great success. Work of this nature is also done at Malamulo by the Seventh Day Adventist Mission. Not all Mission Centres engaged in Maternity and Child Welfare work submit returns to Government but records available show that at least 1,685 African women, during the year, had skilled attention in institutions during labour and at least 798 had skilled attention in their own homes.

It is also recorded that 3,025 women had ante-natal supervision and 3,652 children received attention in various Child Welfare Clinics.

Hospitals, Dispensaries, Laboratories.

37. Government maintains three hospitals for Europeans, and for Africans eighteen hospitals and ninety dispensaries. Special clinics for venereal diseases are held at Zomba and Blantyre.

At present, dressers are in charge of the rural dispensaries but as soon as sufficient staff becomes available it is hoped that at least the most important dispensaries will be staffed by a Hospital and Sanitary Assistant together with a midwife. A unit such as this will be most useful for the needs of the neighbouring villages. One such unit was opened at Chonde during the latter part of the year and is supervised by the Medical Officer, Mlanje.

38. The Central Pathological Laboratory is situated at Zomba but every Government hospital is provided with an African trained to undertake the routine microscopical examinations of blood, faeces and urine.

At the Central Laboratory 6,203 routine specimens were examined. In addition the Pathologist undertook the chemical and bacteriological analyses of 23 specimens of water submitted to him. 65 sections of tissues were prepared and examined.

The medico-legal work undertaken by the laboratory included the examination and reporting on 21 specimens of various nature submitted by the Police and the performance of 29 complete post mortems.

The Pathologist has continued throughout the year the teaching of Medicine, Pathology, Physiology and Pharmacology at the Medical School, Zomba, and in addition 8 students were trained in the Laboratory.

Training of Medical and Health Personnel.

39. The training of the African staff was continued throughout the year with very satisfactory results. The following passed their final examinations in March and September, 1942 and were registered:—

(*a*) Eleven Hospital Assistants.

(*b*) Seven Midwives.

In addition the following juniors have completed their course:—

(*a*) Fourteen Dressers (2 year course)

(*b*) Twelve Dressers (1 year refresher course)

(*c*) Eighteen Nurses (1 year course).

One year course of training for Sanitary Assistants was conducted by the Health Inspector at Zomba. The course for training Sanitary Assistants needs revision. This is under consideration by Government and it is hoped that before long the training of these students will be longer and more comprehensive.

R. CALLEJA,
Acting Director of Medical Services.

	Diseases	European In-patients at Government hospitals		African In-patients at Government hospitals	
		Cases	Deaths	Cases	Deaths
I.	Infectious and Parasitic Diseases ...	163	1	9,083	107
II.	Cancer and other Tumours ...	14	—	217	12
III.	Rheumatism, Diseases of Nutrition and of Endocrine Glands and other General Diseases	4	—	146	5
IV.	Diseases of the blood and blood forming organs	3	—	64	2
V.	Chronic Poisoning	1	—	4	—
VI.	Diseases of the Nervous system and sense organs	12	2	1,074	4
VII.	Diseases of the Circulatory system ...	20	2	158	12
VIII.	Diseases of the Respiratory system ...	24	2	904	41
IX.	Diseases of the Digestive system ...	96	—	771	35
X.	Non-Venereal Diseases of the Genito Urinary system	34	1	506	9
XI.	Diseases of Pregnancy, Childbirth and the Puerperal state	44	—	432	13
XII.	Diseases of the Skin and Cellular Tissue	23	—	4,026	17
XIII.	Diseases of the Bones and Organs of Locomotion	2	—	460	1
XIV.	Congenital Malformations ...	—	—	6	—
XV.	Diseases of Early Infancy ...	1	—	31	3
XVI.	Old Age	—	—	13	3
XVII.	Violence, External causes ...	15	—	2,149	47
XVIII.	Ill-defined Diseases ...	12	—	580	10
	TOTAL ...	468	8	20,624	321

Dr. W. T. C. Berry's Report of work done as a Member of the Nutrition Unit.

NUTRITION UNIT, MEDICAL SECTION.

SECOND INTERIM REPORT.

Tropical Ulcer.

In the year 1941/42, the same method of observing the fate of untended abrasions of the leg in their progress to healing or to ulceration, was adopted, as described in the Director of Medical Services' Annual Report of 1941. In 1940/41, a village on the escarpment and one on the Lake Shore, were studied. This year only the escarpment group was observed, though the Lake Shore group was seen at frequent intervals for other reasons. From the Lake Shore group, 6 children attended Kota-Kota hospital, 4 with frank ulcer of the leg and 2 with very unpleasant sores. This must be taken as meaning that the children had lost the immunity shown in the previous year. The first year of observation was a time of wealth and plenty for these people. Shortage of food in the hills drove the hillmen down with goats and money, willing to pay almost any price for food. The Lake Shore people, subsisting on cassava, a two year crop, were able to sell large quantities at a high price, and had plenty of money to spend on extras. After a while it dawned on them that they were eating too far into their reserves, but by then it was too late. The cassava that they dug up in the latter half of 1941 was immature stuff, yielding poorly. It took them most of 1942 to get back to normal. In the resultant shortage, the children seemed to suffer first and most. Not only was the calorie value of the diet low, but what money people had to spare was spent on the purchase of further supplies of carbohydrates, not on extra foods.

Starvation may be the cause of this change from comparative immunity to quite marked susceptibility to ulcer. On the other hand it may be due to some factor of the nature of which we are ignorant, or to the play of chance upon the mechanical predisposing causes of ulcer, the control of which is impossible. The point will be referred to below.

An article by Clements (Medical Journal of Australia, November 7th, 1936, p. 615) working on the island of Manus, indicates that ulcer is due to a diet low in protein, fat, and vitamin B2. complex, and high in carbohydrate. The diet of the escarpment group, which is moderately susceptible to ulcer, presents these features, with the exception that the diet is higher in fat than on the Lake Shore. The plan at present is to correct these factors one by one, and observe the effect, as regards susceptibility to ulcer, using the same technique as in the previous year. On account of its availability, and of its palatability, which made it of special value in the introduction of an unfamiliar measure, protein was selected as the first factor for correction.

Applying the data compiled on similar villages by the Nutrition Survey of 1939 the diet of these children (ages 4-16) was assessed to vary between 1.5 and 2.5 gm. protein per k.b.w. daily. About 95 per cent of this protein is derived from maize. The protein of meat is known to have a marked complementary action to that of maize.

A group of 40 children was enrolled. Lean dried meat was obtained, mostly from the larger game of the district. Analysis of typical samples of the meat was kindly carried out by Dr. Raymond, Government Medical Service, Tanganyika. After allowance had been made for the proportions of meat supplied by different animals, a value of 60.312 gm. protein per 100 gm. was taken as representative for the year. Meat was fed to the children 3 times weekly, in average quantity 153.36 gm. each, rough allowance being made for the size of the child. The average weight of the children was 22.695 kilos. An average daily does of 1.5 gm./k.b.w. was thus given. This, in conjunction with the protein already in the diet, gave a daily intake of 3-4 gm./k.b.w. of protein of high biological value.

When supplies of meat were plentiful, the ration was increased by 50 per cent. This occurred altogether for 3 months. Towards the end of the year the children became so sated with meat that they had to be given a reward to get them to finish it. A gap of 3 weeks occurred in June when supplies were not available. Those children who had unhealed abrasions at the end of the experiment were kept out the supplement until they were healed.

In addition to the meat fed group, two control groups were formed from the nearest villages, and observed similarly.

The number of abrasions observed, and their duration in weeks, is recorded in Table 1.

	Total number Abrasions.	Duration in weeks taken for abrasions to heal.													Progressing to Ulcer
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	over 12.	
Meat fed group	288	95	79	41	17	20	9	5	1	5	3	2	1	7	3
Control group I	184	67	50	29	10	8	3	33	—	—	1	1	—	7	5
Control group II	323	115	98	54	20	4	5	17	3	1	2	1	1	—	1

There is a marked difference in the incidence of ulcer in the two control groups, though they lived on fairly similar diets and though they were separated only by a forested ridge 1½ miles wide. This variation, and possibly the variation shown in two successive years in the Lake Shore village, must, until proved otherwise, be regarded as due possibly to the effect of variations in mechanical predisposing factors which we cannot control; therefore, the mathematical criteria of significance cannot be applied to this experiment, and the function of a control series is only to warn one of any very marked variation in these mechanical factors.

All that one can say of the experiment is, that conditions were arranged so that ulcers might reasonably be expected to arise in each group. If lack of protein were the cause of ulcer, one would expect to see immunity in the supplemented group. In actual fact, ulcers did arise. The experiment was negative; since the whole group, as noted in the previous year's work, shows at all times a partial immunity to ulcer, this may, I think, be regarded as a fairly conclusive negative. One of the factors cited by Clements (l.c.) has therefore been eliminated.

In passing, there was no obvious improvement in general health, nor was there significant gain in height or weight, in the meat fed group. This probably indicates, not that growth is optimal, but that it is retarded by other factors in the diet or conditions. To feed the group, meat was got from 3 elephants, 6 hippopotami, 36 native cattle, and about half the lean meat of 3 buffalo. It would, I feel, strain the resources of most labour concerns in this country to feed their employees on this scale; possibly money available might more efficiently be spent on groundnuts, green vegetables, and variations in the diet such as plantains and sweet potatoes.

Bacteriology.

Smears were taken from every abrasion every week as long as pus could be obtained.

Table II gives the incidence, month by month, of abrasions which became infected with typical, indubitable, fusiform bacilli, compared with those infected with cocci and (atypical bacilli). These atypical bacilli were in many cases mutated fusiforms, but it has been thought wiser not to group them with the typical cases.

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Cocci	14	18	21	12	5	9	13	20	17	47	25	35
Atypical bacilli	11	11	10	7	—	4	5	—	—	2	4	2
Typical bacilli	17	11	18	25	2	6	4	5	2	9	5	16
Total number of abrasions	64	76	73	80	21	39	51	50	64	110	79	88

Out of 381 abrasions in the months December-April inclusive, 87 (22.8 per cent) were infected with fusiform bacilli. Out of 414 abrasions from May-December 33 (7.9 per cent) were infected. The rains began in December and ended in April. An abrasion acquired at any time in the year may be infected with fusiforms, but this is nearly 3 times as likely to occur during the rains. The seasonal incidence of ulcer reflects very closely this trend. The inference is that the main factors which determine seasonal variations in incidence of ulcer are mechanical, a moist and warm climate being the most important. The underlying dietetic deficiency, if there is one, is of a component of which the body's stores do not vary very markedly from season to season. In the villages I have observed this rules out vitamins A. and C., of which the greatest supplies are available exactly at the height of the ulcer season.

Table III gives the duration in weeks of those abrasions which were infected with typical fusiforms, and of those that were infected with spirochaetes.

Duration in weeks.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	over 12.	Ulcer	Total
Abrasions inf. with bacilli	9	22	19	9	13	8	4	1	3	4	3	2	14	9	120
Abrasions inf. with spirochaetes	—	—	—	—	—	—	—	—	—	1	—	—	8	2	11

Great variations in the duration of the lesion may occur in successive abrasions upon the legs of an individual, although the infecting organism is apparently the same. This is due to the nature, severity and situation, of the original injury. It was not possible, in this series, to select any individuals who showed special immunity or susceptibility to a succession of abrasions thus infected.

The abrasions and ulcers of the previous year at no time showed spirochaetes in the pus. Spirochaetes were, however, found in some of this year's series. The abrasion did not seem to be any the worse for their presence, they were found for a few weeks only, in very low concentration (from 4 per field to 1 per 25 field) and they invariably disappeared before the fusiform bacilli. The organism appears to play a passive part in these early lesions.